NETWORK AND COMPUTER SECURITY

SUMMARY

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INHOUDSOPGAVE

1 INTRODUCTION

1.1 Security in the media

- Security <=> User friendly: work of security personel goes unnoticed when everything is good, but they get blamed when things go wrong.

- Users remains a security risk:
    - Due to lack of knowledge: *1 in 10 in a survey think HTML is an STD - Los Angeles Times* [1]
    - Due to incompetence
    - Information can stell be shared non-digitally

- Nobody is safe: *NSA hackt Belgische cyberprof - De Standaard* [2]

- Privacy vs Security: sacrificing privacy so data can be used for security.
    - *AIVD hackt internetfora, 'tegen wet in' - NRC* [3]
    - *Révélations sur le Big Brother français* [4]

- Check yourself using `https://haveibeenpwned.com/`

- Privacy vs Health: tracing apps in times of COVID-19

- Journalists aren't alwasy exactly IT experts →remain a critic, remain sceptic

- Future trends: blockchains
    - mainly used for data integrity through **public ledgers**
    - Used to log activity.
        * Detect malicious operations, hackers, foreign surveillance, database modifications
        * Equally important as access restrictions

- Future trends: cyber warface
    - Nation wide actions to cause damage or disruption. Can include physical impact and/or harm to human persons
    - Interesting targets: traffic lights, electricity systems, water filtration, power plants
    - Stuxnet:
        * Worm that targeted Iranian nuclear facilities, damaging centrifuges and other hardware
        * Most likely an American-Israeli cyberweapon
    - Petya: ransomware or state attack?
        * Focused strongly on Ukraine systems
        * Made very little money
        * Either very bugge, or very damaging by purpose: permanent removal of files, nuclear power plants, ministries, metros and banks offline, possible link with assassination of Maksym Shapoval
    - Future trends: IoT: *Docs shielded Cheney defibrillator from hacks - CNN* [5]

1.2 Example Incidents

- Ashley Madison (2015)

- DNC email leak (2016)

- Mirai (2016)

- Twitter hack (2020)

1.3 Why do we need security? Why Information Security?

- Counterpart of securing material objects
    - Material object have some **value**
    - Can be stolen or damaged
    - Cost for security/protection takes into account value and risk of theft/damage

- Risk of threats against information security is **much** greater

- Value of information sometimes hard to assess, best estimated by damage caused. Losses cannot be undone

- Threats against information include:
    - **Loss** of information
    - **Forged** information
    - **Unauthorised release** of information
    - **Repudiation** of information

- Value of information systems hard to asses. Systems used to enable service →damage when service unavailable or unreliable

- Threats against information systems include:
    - **Unavailability**/disruption of service
    - **Unauthorised acces** to service
    - Threats against exchanged information

- Security measures for information systems:
    - **Information Security**: encryption, virus scanners, firewalls...
    - Carry some cost (installation, maintenance, computation time)
    - dependent on risk and potential damage

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